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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/006,880	12/05/2001	Vijay A. Deshpande	12801.0083.NPUS04	5128
26361	7590	12/15/2004	EXAMINER	
STEPHEN H. CAGLE HOWREY, SIMON, ARNOLD & WHITE, LLP 750 BERING DRIVE HOUSTON, TX 77057			RIDLEY, BASIA ANNA	
			ART UNIT	PAPER NUMBER
			1764	

DATE MAILED: 12/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/006,880

Applicant(s)

DESHPANDE, VIJAY A.

Examiner

Basia Ridley

BR

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 December 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>071902-1, 071902-2, 071902</u> | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Information Disclosure Statement

1. The USP 5,997,594 cited in the second information disclosure statement filed on 19 July 2002 has been already submitted and considered as part of the information disclosure statement filed in the first information disclosure statement filed on 19 July 2002.

Specification

2. The disclosure is objected to because of the following informalities:
- P2/L27, "processor ." should be replaced with --processor.--;
 - "F" is used throughout the specification to indicate, both, the feed stream and the cooling step;
 - P9/L13-18, "effluent" and "product gas" should be replaced with --effluent P-- and --product gas P, respectively;
 - inconsistent capitalization throughout specification should be corrected, see P10/L20-29, P12/L24-30 and P13/L16.

Appropriate correction is required.

Drawings

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: "152" on P10/L27; "300", "310", "320", "330", "340", "350", "360", "370", "380" and "390" on pages 11-12.
4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "F" has been used to designate both the feed stream and cooling process step.
5. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: "101" in Fig. 2 and "400", "410", "420", "430", "440", "450", "460", "470", "480" and "490" in Fig. 3A-3B.

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6. The drawings are objected to under 37 CFR 1.83(a) because Fig. 3A fails to show a module effluent (ME) as described in the specification, but rather it shows two module feeds (MF). Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d).
7. The drawings are objected to under 37 CFR 1.83(a) because the arrow indicating direction of flow for the module effluent (ME) in Fig. 3B indicates that the module effluent enters the module. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d).
8. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Cleary (USP 5,326,537).

Regarding claim 1, Cleary discloses a module comprising:

- a module inlet (38) for receiving a feed stream;
- a module outlet (39) for producing an effluent stream;
- a reactor (12) having a reactor inlet (17), a reactor outlet (25), and catalyst bed (15) forming a fluid communication conduit between the reactor inlet (17) and the reactor outlet (25);
- wherein the module inlet (38) is in fluid communication with the reactor inlet (17) and the module outlet (39) is in fluid communication with the reactor outlet (25); and wherein
- the combination of module inlet and module outlet form a heat exchanger (14) for heating the feed stream against hot reactor product prior to being introduced to the reactor inlet (Fig. 4-6).

Regarding claims 2-5, Cleary discloses a module comprising:

- a module inlet (38) for receiving a feed stream;
- a module outlet (39) for producing an effluent stream;
- a reactor (12) having a reactor inlet (17), a reactor outlet (25), and catalyst (15);
- an inlet spiral passage (36) in fluid communication with the module inlet (38) to the reactor inlet (17); and
- outlet spiral passage (37) in fluid communication with reactor outlet (25) to module outlet (39);

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- wherein the feed stream is introduced to the module inlet (38), passes through the inlet spiral passage (36) and is heated by hot reactor product passing through the outlet spiral passage (37);
- wherein the reactor is a fixed bed reactor (C7/L10-23);
- further comprising a flow distribution manifold (13) in fluid communication with the reactor inlet (17) for evenly distributing flow into the reactor (12);
- further comprising a flow collection manifold (16) in fluid communication with the reactor (12) for directing the hot reactor product to the reactor outlet (25).

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 6-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cleary (USP 5,326,537) in view of McShea, III et al. (USP 4,483,691).

Regarding claims 6-11, Cleary discloses a module comprising:

- a module inlet (38) for receiving a feed stream;
- a module outlet (39) for producing an effluent stream;
- a fixed bed reactor (12) having a reactor inlet (17), a reactor outlet (25), and catalyst (15);
- an inlet spiral passage (36) in fluid communication with the module inlet (38) to the reactor inlet (17); and
- an outlet spiral passage (37) in fluid communication with the reactor outlet (25) to module outlet (39);

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- a flow distribution manifold (13) in fluid communication with the reactor inlet (17) for evenly distributing flow into the reactor (12);
- a flow collection manifold (16) in fluid communication with the reactor (12) for directing the hot reactor product to the reactor outlet (25).
- wherein the feed stream is introduced to the module inlet (38), passes through the inlet spiral passage (36) and is heated by the hot reactor product passing through the outlet spiral passage (37);
- wherein the catalyst includes supported catalyst particles (C3/L48-52);
- wherein the catalyst includes monoliths (C3/L48-52).

While Cleary discloses that the catalyst used in the catalytic reactor is a catalyst comprising a platinum group metal, typically comprised of platinum and/or palladium, deposited on high surface alumina substrate which in turn is deposited on a honeycomb support structure of stainless steel or ceramic (C1/L18-30 and C3/L48-52), the reference does not explicitly disclose said catalyst being used as an autothermal catalyst including a partial oxidation catalyst and a steam reforming catalyst.

McShea, III et al. teaches that platinum group metal, typically comprised of platinum and/or palladium, deposited on high surface alumina substrate which in turn is deposited on a honeycomb support structure of stainless steel or ceramic is a known autothermal catalyst (C5/L65-C7/L20 and C12/L16-50). Additionally the reference in Fig. 2, teaches that autothermal reforming can be successfully performed in a reactor (80) comprising said catalyst, wherein the reactor feed (72, 74) is preheated in an indirect heat exchanger (76) by reactor effluent (82). Therefore, to use the reactor and catalyst of Cleary for autothermal reforming would be obvious to one of ordinary skill in the art, because it would amount to nothing more than a use of a known catalyst and reactor for its intended use in a known environment to accomplish entirely expected result.

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Regarding limitations recited in claim 6-11 which are directed to a manner of operating disclosed reactor, neither the manner of operating a disclosed device nor material or article worked upon further limit an apparatus claim. Said limitations do not differentiate apparatus claims from prior art. See MPEP § 2114 and 2115. Further, process limitations do not have patentable weight in an apparatus claim. See *Ex parte Thibault*, 164 USPQ 666, 667 (Bd. App. 1969) that states "Expressions relating the apparatus to contents thereof and to an intended operation are of no significance in determining patentability of the apparatus claim."

Conclusion

13. In view of the foregoing, none of the claims are allowed.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Basia Ridley, whose telephone number is (571) 272-1453.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola, can be reached on (571) 272-1444.

The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Technical Center 1700 General Information Telephone No. is (571) 272-1700. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Questions on access to the Private PAIR system should be directed to the Electronic Business Center (EBC) at (866) 217-9197 (toll-free).



Basia Ridley
Examiner
Art Unit 1764

BR
December 13, 2004